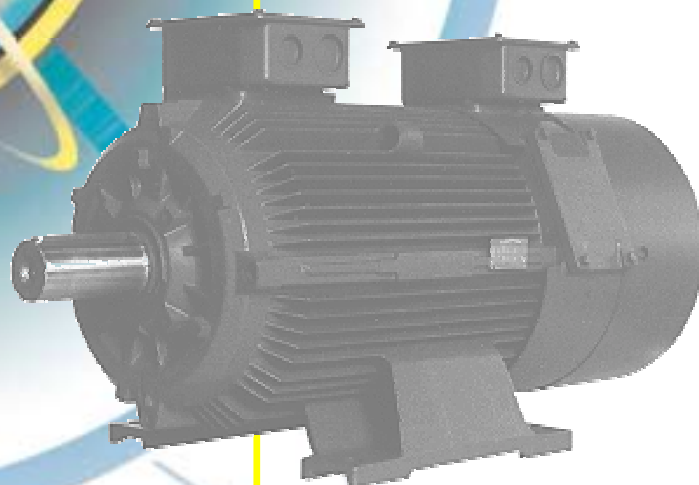
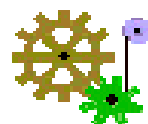


Three Phase Induction Motors With Rotors Wound for Hoists



Series E4F 160 - 315
E5F 355 - 400

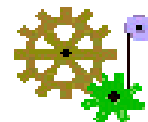




INDEX

Use	2	Electrical Tolerances	9
		Mechanical Tolerances	9
General Characteristics	2	Technical Data 4 pole (service S1 - S3 - S4 -S5)	10
Standards	2	Technical Data 6 pole (service S1 - S3 - S4 -S5)	11
Mounting Arrangements	3	Technical Data 8 pole (service S1 - S3 - S4 -S5)	12
Protection Grades	3	Technical Data 10 pole (service S1 - S3 - S4 -S5)	13
Cooling	3	Dimensions shaft height 160 - 315 mounting IM B3	14
Materials	3	Dimensions shaft height 160 - 315 mounting IM V1	15
Terminal Boxes	3	Dimensions shaft height 355 mounting IM B3	16
Grounding	3	Dimensions shaft height 400 mounting IM B3	17
Brushgear	4	Nomenclature (H 160-250)	18
Sliprings	4	Nomenclature (H 280 - 315)	19
Rotor	4	Nomenclature (H 355 - 400)	20
Balancing	4		
Bearings	5		
Space Heaters	5		
Output Ratings and Technical Data	6		
Duty	6		
⇒ Continuous Duty (S1)	7		
⇒ Limited Duty (S2)	8		
⇒ Intermittent Duty (S3 , S4 , S5)			

GENERAL CHARACTERISTICS



USE

This series of machines is normally used in lifting plants and similar, therefore the following service conditions apply : continuous , short and intermittent duty.

The robust construction and both thermal and torque margins, allow for use in aggressive working environments and guaranty a high operating level of security.

GENERAL CHARACTERISTICS

The motors in this series are closed and cooled by means of an external fan; have wound rotors, manifolds, rings and fixed brushes. They are available in frame sizes with shaft height from 160 to 400mm.

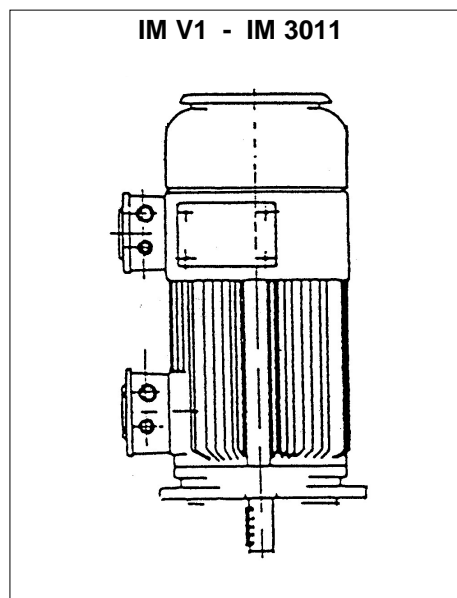
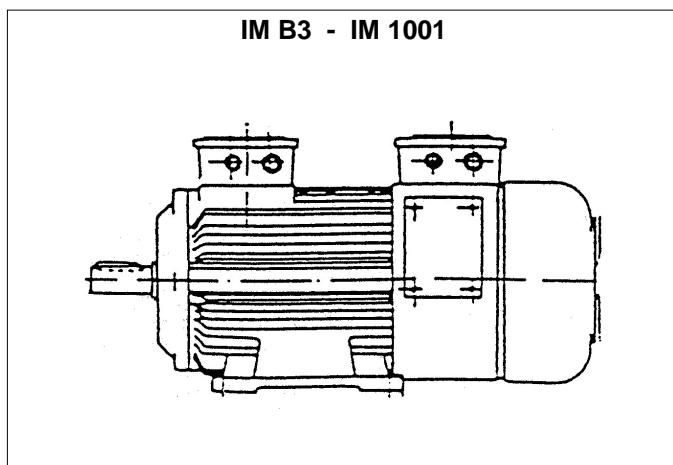
STANDARDS

In many countries national standards have been harmonised with those published by the **IEC** ; these in practice are not substantially different from the national standards stated.

CEI EN 60034 - 1	IEC 34 - 1	- Functional characteristics and functioning
CEI EN 60034 - 5	IEC 34 - 5	- Classification of protection degree.
CEI EN 60034 - 6	IEC 34 - 6	- Cooling method
CEI EN 60034 - 7	IEC 34 - 7	- Mounting arrangement and installation type.
CEI 2 - 8	IEC 34 - 8	- Terminal markings and sense of rotation.
CEI EN 60034 - 9	IEC 34 - 9	- Noise limits.
CEI 2 - 23	IEC 34 - 14	- Mechanical vibration intensity limits.

MOUNTING ARRANGEMENT

Series E motors are constructed with a free shaft extension and are available in the following mounting arrangements:



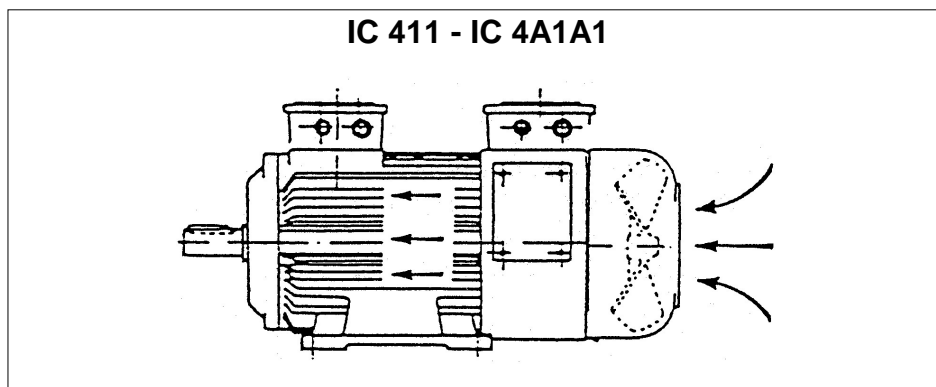
Other mounting arrangements on request.

PROTECTION INDEX

The motors have protection degree IP 55 . The external fan is covered by a guard giving protection against the unintentional entry of fingers at the air inlet side.

COOLING

The motors have a finned surface and are cooled by means of surface ventilation.



Ventilation is obtained by means of a fan mounted on the shaft outside the motor at the non-drive end; the ambient air, blown by the fan, is channelled by a fan cowl and cools the finned casing. In normal execution the motors have radial flow fans and they are able to function bi-directionally.

MATERIALS

Series	Framesize				
	160 ÷ 250	250 ÷ 280	315M	355	400
Casing	Cast Iron			Steel	
Endshields	Cast Iron				
Fan Cover	Steel				
Fan	Thermoplastic			Steel	

TERMINAL BOXES

In the standard versions the terminal boxes are positioned on the upper side of the casing.

FRAME SIZE	N° TERMINAL			Maximum cable diameter in mm	Cable Gland
	STATOR	ROTOR	DIM		
160 ÷ 180	6	6	M 8	29	Pg 29
200 ÷ 250	6	6	M 8	36	Pg 36
280	6	6	M 12	42	Pg 42
315	6	6	M 12	53	-
355	3	3	30 * 6	3*80	-
400	3	3	50 * 6	3* 80	-

GROUNDING

There is a grounding terminal situated on the inside of the terminal box. It is possible to provide a second grounding terminal on the outside of the terminal box. The connection must be made with a copper conductor of adequate section, in accordance with applicable standards.

BRUSHGEAR

The brushgear is designed for permanent, brush contact. For a reliable contact, unaffected by vibrations, three spring loaded twin brush holders are provided which are mounted on a common shaft. Brushed can be replaced without the use of tools.

framesize	material	dimensions	pressure g / cm ²
160 180 ÷ 200 225 ÷ 250 280 315 355 400	Metalgraphite	8 x 16 x 22 10 x 25 x 32 12,5 x 25 x 32 16 x 32 x 40	200 ÷ 250
		20 x 32 x 40 32 x 40 x 40 32 x 40 x 40	180 ÷ 225

SLIPRINGS

The collector is of robust construction and special bronze sliprings are fitted throughout. Protruding insulating discs between the sliprings make for increased creepage paths and clearances, ensuring reliable reversing with double the locked rotor voltage.

ROTOR

The rotor is provided with a copper wire enamel winding with insulation class H. To provide the required stability under mechanical and electrical vibration, the rotor winding is bound with insulating material and impregnated with hot polymerising varnishes.

BALANCING

The motors are dynamically balanced with a half key applied to the shaft extension. Motors can be supplied with a reduced or special vibration level on request. In the following table is indicated the maximum vibration levels according to the different shaft heights.

Quality Grade	Speed (min ⁻¹)	Maximum rms-values of vibration velocity for shaft height H (mm / s)	
		160 ÷ H ÷ 225	225 ÷ H ÷ 400
N (Normal)	600 ÷ 3600	2,8	4,5
R (Reduced)	>600 ÷ 1800	1,12	1,8
	1800 ÷ 3600	1,8	2,8
S (Special)	600 ÷ 1800	0,71	1,12
	>1800 ÷ 3600	1,12	1,8

BEARINGS

Standard motors are equipped with ball bearings with a shield on the rear side of the motor for 160 – 250 shaft heights. Bearings are greased for life with a considerable grease reserve, guaranteeing the effectiveness of the lubrication with time.

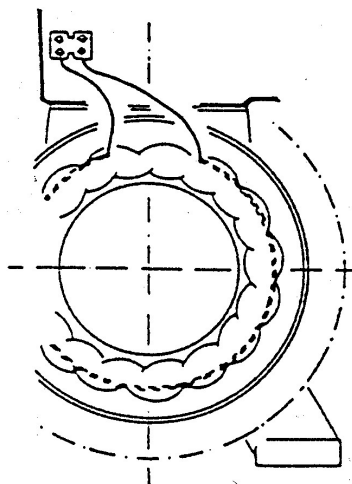
Frames 280 and above are provided with grease lubricated roller bearings and are fitted with a regreasing device (Tecalemit type) and a grease discharge device. Excess grease is collected in space left in the housing, for removal when maintenance is carried out.

Framesize	Motor Bearings Drive End (DS)	Non-Drive End (NS)
160	6310 - Z - C3	6209 - Z - C3
180 M	6310 - Z - C3	6209 - Z - C3
180 L	6310 - Z - C3	6212 - Z - C3
200	6312 - Z - C3	6212 - Z - C3
225	6313 - Z - C3	6214 - Z - C3
250	6315 - Z - C3	6214 - Z - C3
280	NU 2217 - C3	6314 - C3
315S	NU 2219 - C3	6316 - C3
315 M	NU 2219 - C3	6316 - C3
355 *	NU 222 - C3	6317 - C3
400 *	NU 322 - C3	6322 - C3

SPACE HEATERS

Motors subject to atmospheric condensation, either through standing idle in damp environments or because of wide variations in the surrounding temperature, may be fitted with an anti-condensation heater. These heaters consist of tapes wound around the end windings. During motor operation the heating must be switched off.

Shaft Height H	Voltage Volt	Power W
160 - 180	110 o 220	50
200 - 250		65
280		100
315		200
355		300
400		400



OUTPUT AND TECHNICAL DATA

The outputs and technical data indicated in the table are valid for a frequency of 50 Hz, the feeding voltage indicated on the nameplate and an ambient temperature of 40 °C. The functional characteristics are guaranteed within the stable tolerances from the standard. For functions with ambient temperature from 40°C to 60 °C, the output must be modified by multiplying with the coefficients in the following table:

Temperature Coefficient	Ambient air temperature in °C					
	<30	40	45	50	55	60
	1,07	1	0,96	0,92	0,87	0,92

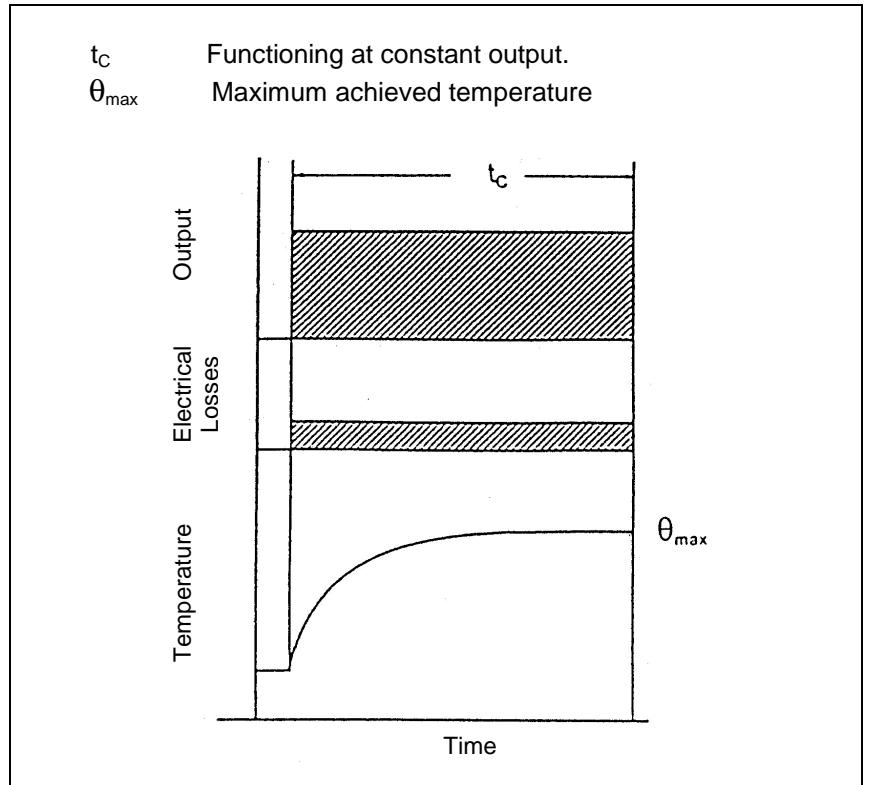
For ambient temperatures less than 30 °C it is possible to increase the output by multiplying with the coefficient in the table.

DUTY

- ⇒ **Duty (S1)** – Functioning at constant load for a duration sufficient to achieve thermal equilibrium.
- ⇒ **Duty (S2)** – Functioning at a constant load for a determined period of time, lower than that required for achieving thermal equilibrium, followed by a rest period of sufficient length to re-stabilise the thermal equilibrium of the machine and the cooling fluid.
- ⇒ **Duty (S3)** – Identical cyclic functioning, comprising of a period of functioning at constant load and a period of rest.
- ⇒ **Duty (S4)** - Identical cyclic functioning, comprising of non-negligable starting times, a period at constant load and a period of rest
- ⇒ **Duty (S5)** - Identical cyclic functioning, comprising of starting times, a period at constant load, a period of rapid electric braking and a period of rest .

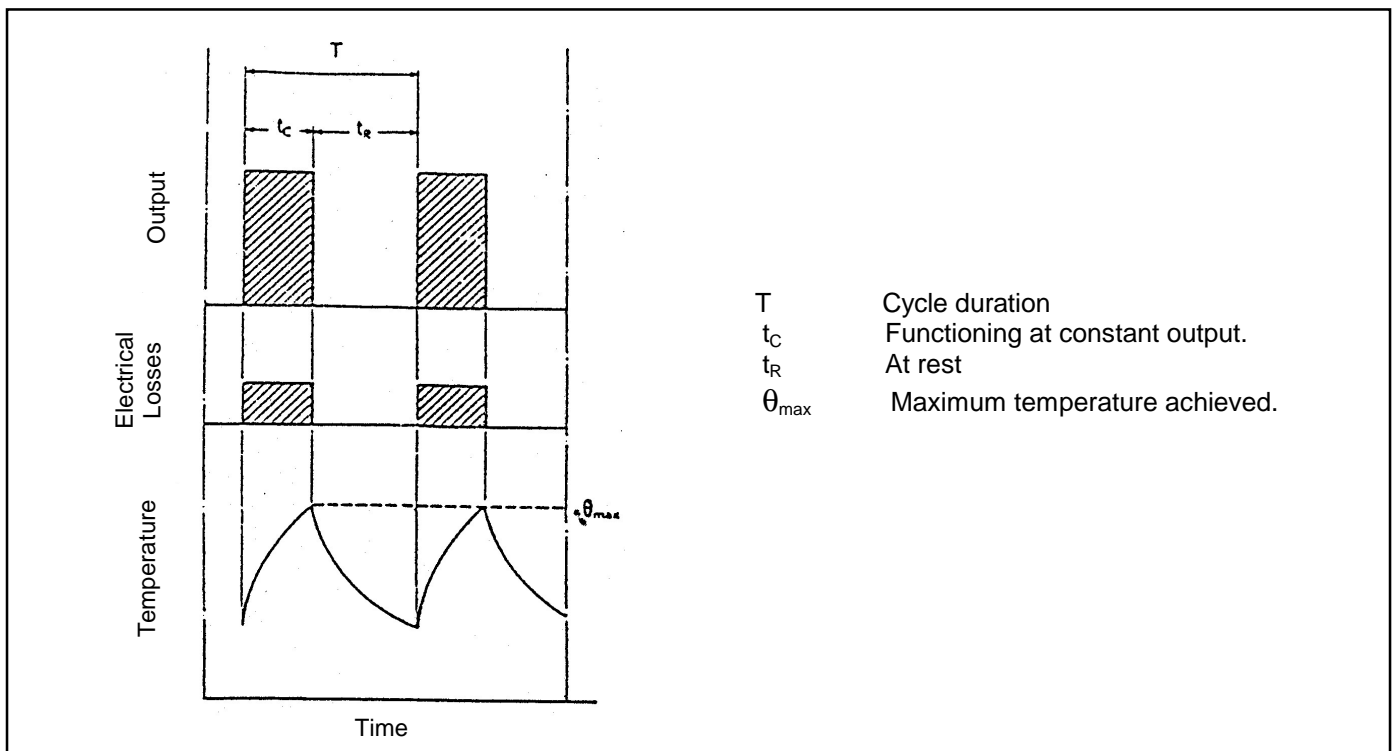
CONTINUOUS DUTY (S1)

If the period in which the machine remains at nominal load is greater than 3 times the constant property of thermal time, thermal equilibrium reached by the windings can be determined; a greater cycle duration does not influence the final temperature. The starting conditions are not influenced as the winding temperature does not change.



SHORT DUTY (S2)

The following table indicates the power which the motors can supply in durations from 30 to 60 minutes. In accordance with standards, the actual output for a service of 60 minutes is thermally equivalent to that of the intermittent service shown in the tables related to duties S3, S4 and S5.



Frame Size	Output in Kw duty S2							
	4 poles		6 poles		8 poles		10 poles	
	60 min.	30 min.	60 min.	30 min.	60 min.	30 min.	60 min.	30 min.
E4F 160 M	8,7	9,5	6,5	7	4,7	5,2		
E4F 160 L	13	14	9	10	6,5	7,2		
E4F 180 L	18	20	13	14,5	9	10		
E4F 200 LA	22,5	25	18	20	13,5	15		
E4F 200 LB	27	30						
E4F 225 MA	37	40	23	26	18,5	21		
E4F 225 MB			27	30	23	26		
E4F 250 MA	46	50	34	38	27	30	20,5	23
E4F 250 MB	56	62	43	48	33	37	25	28
E4F 280 S	68	75	57	64	48	52	34	38
E4F 280 M	92	100	70	78	59	67	44	50
E4F 315 S	110	120	95	105	76	85	56	64
E4F 315 MA	135	150						
E4F 315 MB	160	180	115	130	95	105	70	80
E4F 315 MC	195	220	132	150				
E4F 315 MD			160	180				
E5F 355 LA			195	220	120	135	93	106
E5F 355 LC			240	270	152	170	118	135
E5F 400 LA					175	195	148	1170
E5F 400 LC					200	220	187	215

INTERMITTENT DUTY (S3 , S4 , S5)

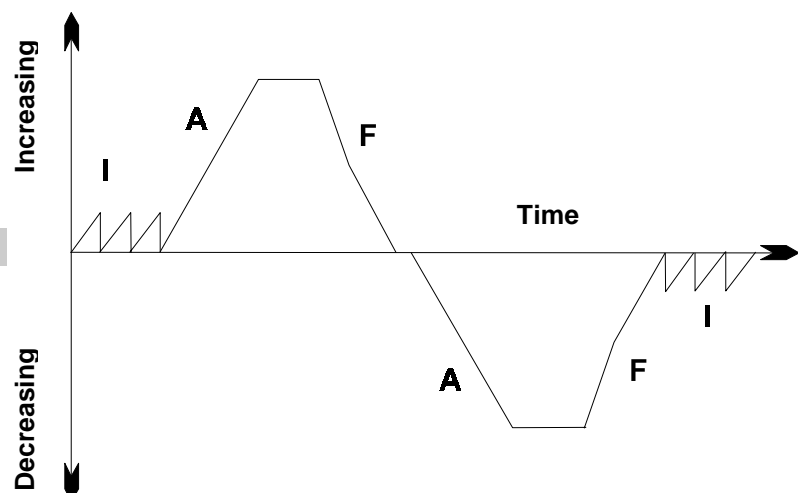
Intermittent duty is characterised by the percentage relationship between the duration of the work period and the total duration of the cycle (relationship of intermittence %) and from the number of cycles per hour. The cycle duration is considered from 10 minutes and the relationship expected is **15 % , 25 % , 40 % , 60 %** . The duration of the work cycle (considered hourly) of the motor, used for lifting plants, can be submitted at 3 different working conditions, which for convention have the following thermal equivalence :

- ◆ (**A / h**) - N° Complete starts
- ◆ (**I / h**) - N° current impulses, thermally equivalent to 25% of a start.
- ◆ (**F / h**) - N° Brakes in limited countercurrent at 1/3 of the nominal velocity , thermally equivalent to 80% of a start.

The starting class (**CI / h**) defines the number of starts of a motor per hour.

The value can be obtained from the following expression.

$$CI / h = A / h + 0,25 I / h + 0,8 F / h$$



The standard considers the following classes of starts per hour (CI / h) for 75 - 150 - 300 - 600 . The following table gives some typical operating conditions and the corresponding starting class.

CI / h (Starting class)	A / h (Starts / h)	I / h (Impulses / h)	F / h (Brakes /h)	Intermittence %
75 cycles per hour	75	0	0	25 , 40 , 60 , 100
	50	100	0	
	33	65	33	
150 cycles per hour	150	0	0	25 , 40 , 60
	75	300	0	
	65	130	65	
300 cycles per hour	300	0	0	40 , 60
	200	400	0	
	130	260	130	
600 cycles per hour	600	0	0	60
	350	1000	0	
	260	520	260	

ELECTRICAL TOLERANCES

Power factor	- 1 / 6 of (1 - cos φ)	min. 0,02 max. 0,07
Efficiency	- 15 % of (1 - η) - 10 % of (1 - η)	Pn ≤ 50 Kw Pn ≥ 50 Kw
Velocity	± 20 % of guaranteed slip	
Maximum torque	- 10 % of given value (min. 1,6)	
Moment of inertia	± 10 % of given value	

MECHANICAL TOLERANCES

Indicated in the following pages are the overall dimensions of the motors (in mm) with varying frame sizes and mounting arrangements . These are also valid for types derived with authorisation from the technical office. The second shaft extension comes constructed only on request. The following table indicates tolerances in accordance with ISO R 775 and 773 and IEC 72.

Component	Designation	Tolerance
Shaft Extension	D - DA	D ≤ 230 mm ⇔ J 6
		D ≥ 250mm ⇔ h 6
Key	F - FA	h 9
Flange concentricity	N	h ≤ 132 ⇔ j6
		h ≥ 160 ⇔ h6

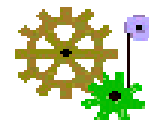
Distance of fastening holes	A - B	± 1 mm
Motor width	AC - AB	+ 2 %
Motor length	L - LC	+ 1 %
Motor height	HD	+ 2 %
Shaft height	H	$h \leq 250 \Rightarrow 0,5 \text{ mm}$
		$h \geq 280 \Rightarrow 1 \text{ mm}$

Tapped holes in the shaft extension

Frame size	Drive end (D)	Non-drive end (N)
160	M 16	M 16
180	M 16	M 16
200	M 20	M 16
225	M 20	M 20
250 - 280 - 315	M 20	M 20
355 - 400	M 20	M 20

4 POLES 50 Hz

CONTINUOUS DUTY S1

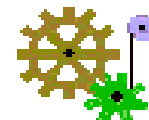


Output Kw	Type	Speed 1/min	η %	Cos φ p.u.	Current (380)A	Rotor		Cm/Cn p.u.	Inertia Kgm ²	Weight Kg
						V	I			
7,7	E4F 160 M 4	1460	87	0,75	17,5	180	25	3,7	0,09	131
11	E4F 160 L 4	1460	87	0,77	25	280	24	3,7	0,1	144
15	E4F 180 L 4	1465	88	0,81	32	250	36	3,9	0,15	203
18,5	E4F 200 LA 4	1465	90	0,81	39	250	45	4	0,16	214
22	E4F 200LB 4	1465	90	0,81	46	285	46	4	0,18	232
30	E4F 225 M 4	1470	91	0,85	59	320	56	3,8	0,4	306
37	E4F 250 MA 4	1470	91	0,85	73	360	61	3,8	0,45	332
45	E4F 250 MB 4	1470	91	0,86	88	435	61	3,8	0,5	358
55	E4F280 S 4	1475	92,5	0,86	105	325	103	4,5	1	570
75	E4F 280 M 4	1475	93	0,86	143	350	128	4,5	1,2	620
90	E4F 315 S 4	1480	93	0,87	170	335	165	4	2,8	780
110	E4F 315 MA 4	1480	93	0,87	208	350	190	4	3,1	840
132	E4F 315 MC 4	1480	93,5	0,87	245	410	195	4	3,5	950
160	E4F 315 MD 4	1485	93,5	0,89	300	540	178	4,5	4,1	1090
200	E5F 355 LA 4	1488	94,3	0,89	362	452	260	3,5	7,8	1600

250	E5F 355 LC 4	1490	94,8	0,89	450	600	246	3,8	10,4	1850
330	E5F 400 LA 4	1491	95,3	0,89	590	Su		3,3	16,3	2150
375	E5F 400 LC 4	1493	95,5	0,89	670			3,6	20,6	2500

4 POLES 50 Hz INTERMITTENT DUTY S3 - S4 - S5

Duty	S 3				S 4 - S 5					
	6				150			300		600
class (Cl/h)										
Type	25%	40 %	60%	100%	25%	40%	60%	40%	60%	60%
E4F 160 M 4	11	10	8,5	7,5	9,5	8,5	7,5	7,5	6,5	5
E4F 160 L 4	16,5	14,5	12,5	11	14	12,5	11	10,5	9,5	7
E4F 180 L 4	22	19,5	17	15	19	17	15	14,5	13	10
E4F 200 LA 4	28	24	21	18,5	23	21	18,5	18	16	12
E4F 200LB 4	34	28	25	22	27	25	22	21	19	14,5
E4F 225 M 4	45	39	34	30	37	33	30	28	25	19
E4F 250 MA 4	55	48	42	37	46	41	37	35	31	24
E4F 250 MB 4	67	58	51	45	56	50	45	42	38	29
E4F280 S 4	80	70	62	55	67	60	55	50	45	35
E4F 280 M 4	110	95	85	75	90	82	75	70	63	48
E4F 315 S 4	130	115	100	90	110	95	90	85	78	60
E4F 315 MA 4	160	140	125	110	132	120	110	105	95	70
E4F 315 MC 4	190	165	150	132	160	145	132	125	115	85
E4F 315 MD 4	230	200	180	160	194	176	160	152	140	104

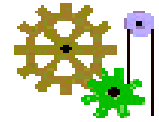


6 POLES 50 Hz CONTINUOUS DUTY S1

Output Kw	Type	Speed 1/min	η %	Cos φ p.u.	Current (380)A	Rotor		Cm/Cn p.u.	Inertia Kgm ²	Weight Kg
						V	I			
5,5	E4F 160 M 6	960	84	0,78	13	165	21	3,4	0,095	125
7,5	E4F 160 L 6	960	86	0,78	17	250	19	3,8	0,13	130
11	E4F 180 L 6	965	87	0,8	24	230	29	3,2	0,17	194
156	E4F 200 L 6	970	88	0,8	32	220	41	3,2	0,23	228
18,5	E4F 225 MA 6	975	89	0,81	39	240	48	3,2	0,4	300
22	E4F 225 MB 6	975	89	0,81	46	260	52	3,2	0,46	316
27	E4F 250 MA 6	975	90	0,81	56	320	51	3,2	0,6	345
34	E4F 250 MB 6	975	90	0,81	71	335	57	3,2	0,66	390
45	E4F280 S 6	980	91,5	0,83	90	205	128	3,8	1	580
55	E4F 280 M 6	980	92	0,83	110	245	134	3,8	1,2	610
75	E4F 315 S 6	985	92,5	0,84	147	265	165	3,2	2,75	790
90	E4F 315 MB 6	985	93	0,84	175	320	165	3,2	3,1	850
110	E4F 315 MC 6	985	93,5	0,84	213	400	165	3,2	4,7	980
132	E4F 315 MD 6	985	93,5	0,84	255	490	160	3,2	5,7	1110
160	E5F 355 LA 6	992	94,2	0,82	315	416	228	3	14	1580
200	E5F 355 LC 6	993	94,5	0,82	393	526	221	3,1	17,5	1810
250	E5F 400 LA 6	993	94,6	0,82	490	655	225	3,1	24	2100
300	E5F400 LC 6	994	94,8	0,82	586	812	217	3,2	32	2550

6 POLES 50 Hz INTERMITTENT DUTY S3 - S4 - S5

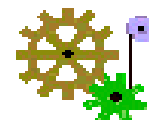
Duty	S 3				S 4 - S 5					
	6				150			300		600
class (Cl/h)	6				150			300		600
Type	25%	40 %	60%	100%	25%	40%	60%	40%	60%	60%
E4F 160 M 6	8	7	6	5,5	7	6	5,5	5,5	5	4
E4F 160 L 6	11,5	10	8,5	7,5	9,5	8,5	7,5	7,0	6,5	5,5
E4F 180 L 6	16,5	14,5	12,5	11	14	12,5	11	10,5	9,5	7,5
E4F 200 L 6	23	20	17,5	15	19	17	15	14	13	10
E4F 225 MA 6	28	25	22	18,5	23	21	18,5	18	16	12,5
E4F 225 MB 6	34	30	26	22	28	25	22	21	19	15
E4F 250 MA 6	42	37	32	27	34	30	27	26	23	18
E4F 250 MB 6	52	45	39	34	43	38	34	32	29	23
E4F280 S 6	70	60	52	45	57	50	45	43	38	30
E4F 280 M 6	85	75	64	55	70	62	55	52	47	37
E4F 315 S 6	115	100	87	75	95	84	75	72	64	50
E4F 315 MB 6	140	120	105	90	113	100	90	85	77	60
E4F 315 MC 64	165	145	125	110	132	120	110	105	90	70
E4F 315 MD 6	195	170	150	132	160	145	132	125	110	85
E5F 355 LA 6	235	205	180	160	195	175	160	150	132	105
E5F 355 LC 6	290	255	225	200	240	220	200	190	165	132

8 POLES**50 Hz****CONTINUOUS DUTY S1**

Output Kw	Type	Speed 1/min	η %	Cos ϕ p.u.	Current (380)A	Rotor		Cm/Cn p.u.	Inertia Kgm ²	Weight Kg
						V	I			
4	E4F 160 M 8	710	80	0,7	10,8	170	15	2,8	0,111	126
5,5	E4F 160 L 8	710	82	0,7	14,5	230	15	2,8	0,13	130
7,5	E4F 180 L 8	720	84,5	0,73	18,5	240	19	2,8	0,18	196
11	E4F 200 L 8	720	88	0,75	26	255	27	3	0,24	233
15	E4F 225 MA 8	730	89	0,75	34	200	44	3,5	0,48	315
18,5	E4F 225 MB 8	730	89	0,75	42	255	43	3,5	0,55	335
22	E4F 250 MA 8	730	89	0,75	50	260	52	3,2	0,6	345
27	E4F 250 MB 8	730	90	0,75	61	310	53	3,2	0,65	395
37	E4F280 S 8	735	90	0,76	82	200	110	3,2	1,45	590
47	E4F 280 M 8	735	91	0,76	104	255	110	3,2	1,8	645
60	E4F 315 S 8	735	92	0,78	128	280	130	3,2	3,9	815
75	E4F 315 MB 8	735	92	0,78	160	340	130	3,2	4,5	940
95	E5F 355 LA 8	742	93,4	0,8	193	290	195	2,8	16	1580
120	E5F 355 LC 8	742	93,8	0,8	243	363	200	2,8	20	1810
160	E5F 400 LA 8	743	94	0,82	315	323	283	2,6	29	2100
200	E5F 400 LC 8	744	94,4	0,82	392	434	270	2,7	40	2550

8 POLES**50 Hz INTERMITTENT DUTY S3 - S4 - S5**

Duty	S 3				S 4 - S 5					
	6				150			300		600
Class (Cl/h)										
Type	25%	40 %	60%	100%	25%	40%	60%	40%	60%	60%
E4F 160 M 8	6	5,3	4,6	4	4,9	4,6	4	4	3,6	3,3
E4F 160 L 8	8,3	7,3	6,2	5,5	6,7	6,2	5,5	5,5	5,2	3,8
E4F 180 L 8	11,5	10	8,5	7,5	9,5	8,5	7,5	7	6,5	5
E4F 200 L 8	16,5	14,5	12,5	11	14	12	11	10,5	9,5	7,5
E4F 225 MA 8	23	20	17,5	15	18,5	16,5	15	14,5	13	10
E4F 225 MB 8	28	25	22	18,5	23	20	18,5	17,5	16	12,5
E4F 250 MA 8	34	30	26	22	28	24	22	21	19	15
E4F 250 MB 8	42	37	32	27	34	30	27	26	24	18
E4F280 S 8	57	50	44	37	47	41	37	35	32	25
E4F 280 M 8	73	63	55	47	60	52	47	45	41	32
E4F 315 S 8	93	80	70	60	75	66	60	57	52	40
E4F 315 MB 8	115	100	88	75	95	83	75	72	65	50
E5F 355 LA 8	145	125	110	95	120	105	95	90	82	65
E5F 355 LC 8	185	160	140	120	150	132	120	115	105	80

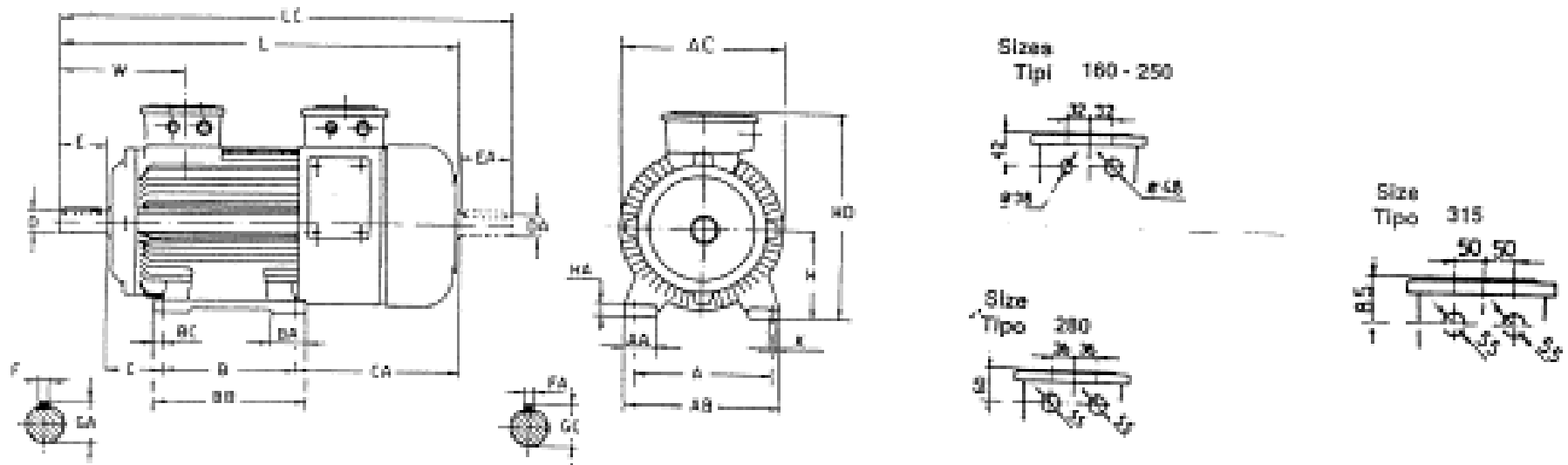

10 POLES
50 Hz
CONTINUOUS DUTY S1

Output Kw	Type	Speed 1/min	η %	Cos ϕ p.u.	Current (380)A	Rotor		Cm/Cn p.u.	Inertia Kgm ²	Weight Kg
						V	I			
16,5	E4F 250 MA 10	580	90	0,72	39	240	42	2,8	0,62	445
20	E4F 250 MB 10	580	90	0,72	47	280	43	2,8	0,7	470
27	E4F280 S 10	585	90	0,74	62	170	96	2,8	2,1	590
35	E4F 280 M 10	585	90	0,74	80	210	100	2,8	2,6	645
45	E4F 315 S 10	590	91	0,78	95	230	115	2,8	4,8	810
55	E4F 315 MB 10	590	91	0,78	118	295	112	2,8	5,5	940
73	E5F 355 LA 10	593	92,7	0,72	166	295	149	2,8	12,5	1580
92	E5F 355 LC 10	594	93,2	0,72	208	370	149	2,9	15,5	1810
115	E5F 400 LA 10	594	93,8	0,72	258	385	180	2,8	27,3	2100
145	E5F 400 LC 10	595	94,1	0,72	325	455	190	2,8	32	2350

10 POLES
50 Hz
INTERMITTENT DUTY S3 - S4 - S5

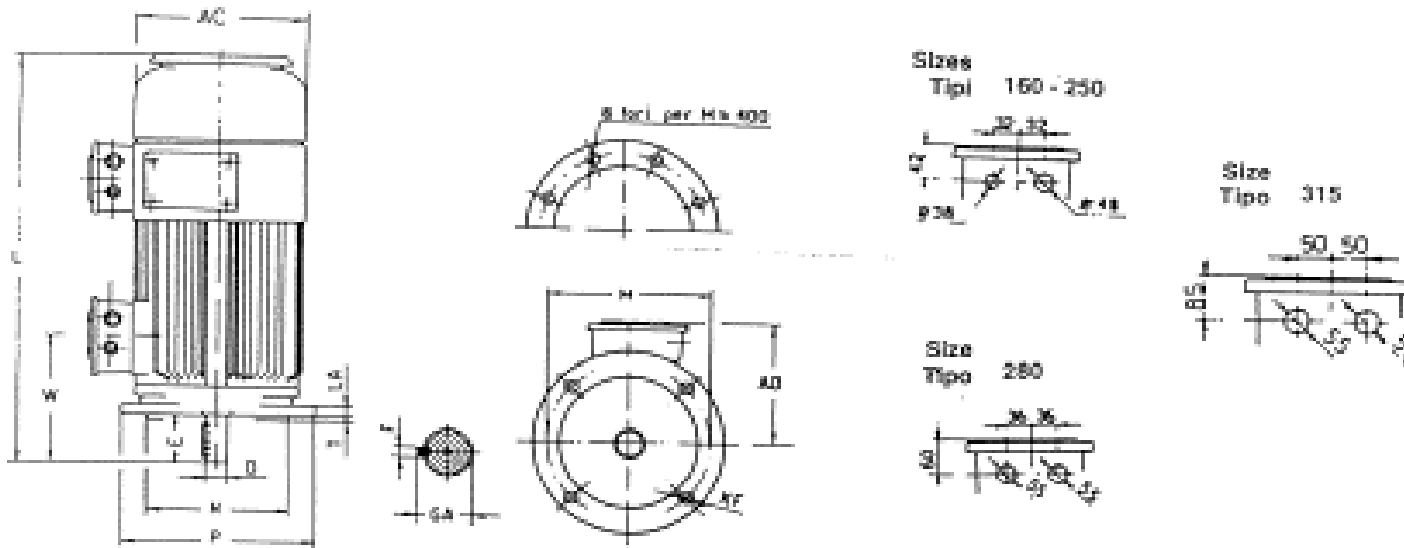
Duty class (Cl/h)	S 3				S 4 - S 5					
	6				150			300		600
	25%	40 %	60%	100%	25%	40%	60%	40%	60%	60%
Type										
E4F 250 MA 10	26	23	20	16,5	21	18,5	16,5	16	14	11
E4F 250 MB 10	32	28	24	20	25	22	20	19	17	13
E4F280 S 10	42	37	32	27	34	30	27	26	23	18
E4F 280 M 10	55	48	42	35	45	40	35	34	30	23
E4F 315 S 10	70	60	52	44	56	50	44	42	37	29
E4F 315 MB 10	87	75	65	55	70	62	55	53	46	38
E5F 355 LA 10	115	100	88	73	93	83	73	70	62	48
E5F 355 LC 10	145	125	108	90,92	117	105	92	88	78	60
E5F 400 LA 10	180	160	135	115	146	130	115	110	97	75
E5F 400 LC 10	230	290	170	145	185	165	145	140	123	95

IM B3 - IM 1001

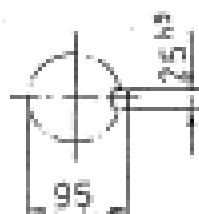
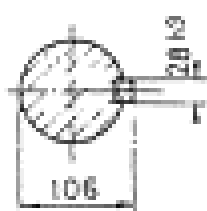
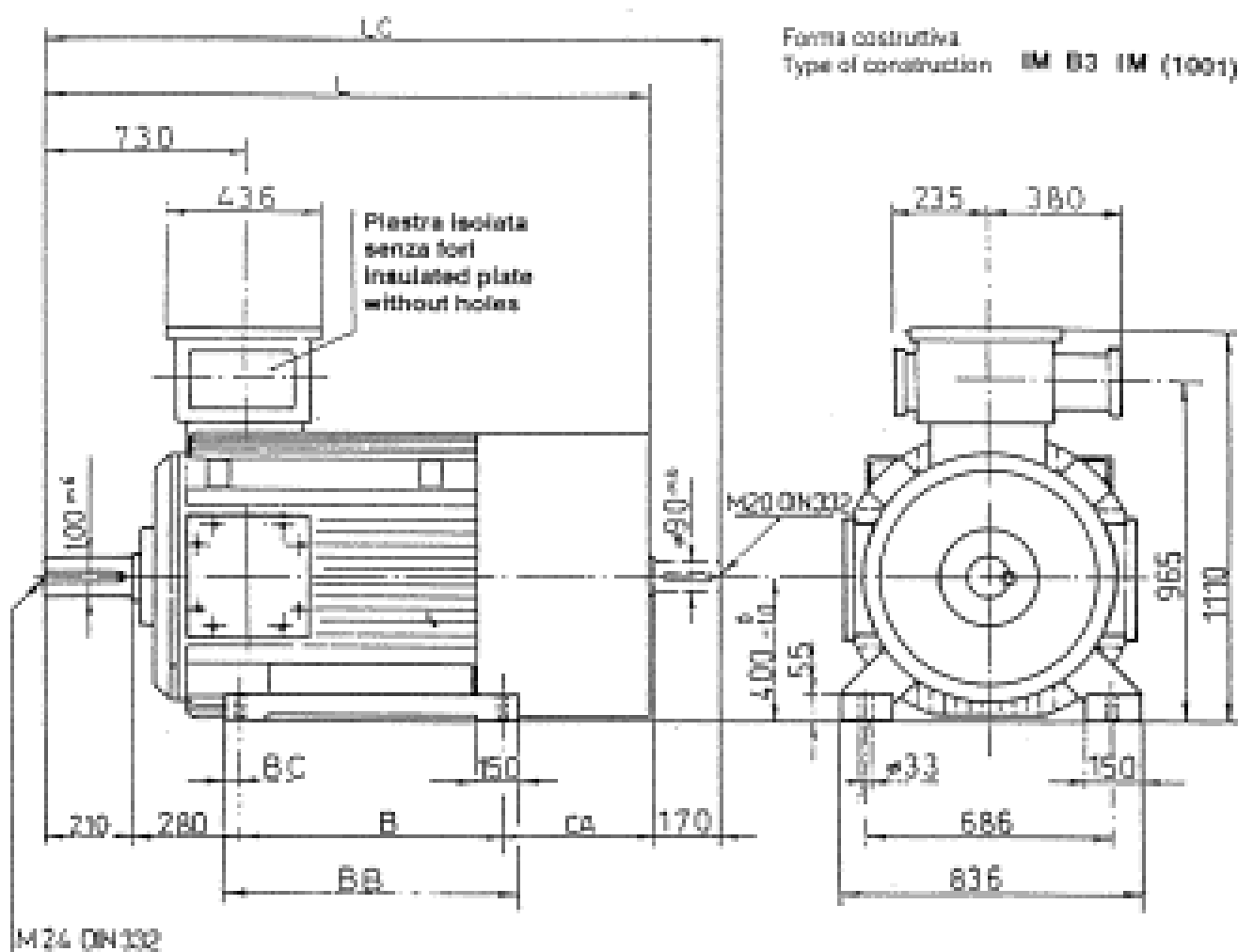


Grandezza IEC	Dimensioni principali																Estremità degli alberi										
	A	AA	AB	AC	B	BA	BB	BC	C	CA	H	HA	HD	K	L	LC	W	D	E	F+g	GA	KD	DA	EA	FA	GD	K4
60 M	254	55	300	314	210	55	298	21	108	390	160	22	402	14	815	928	279	42	110	12	45	M16	42	110	12	43	M16
					254					346																	
100 L	279	58	324	354	279	60	321	21	121	384	180	24	448	18	891	1004	296	48	110	14	51,5	M16	42	110	12	43	M16
					305					346																	
200 L	318	63	368	411	288	75	350	22,5	133	346	288	20	521	18	908	1111	318	55	140	16	59	M20	55	110	15	50	M20
					311					428																	
250 L	408	76	406	411	349	95	406	28,5	168	344	290	20	546	22	908	1111	318	60	140	18	64	M20	55	110	15	50	M20
					311					401																	
315 S	457	90	540	490	368	110	480	30,5	198	532	288	38	650	22	1250	1400	380	68	170	22	85	M20	65	140	18	69	M20
					419					481																	
315 M	508	110	590	604	405	165	520	32	218	600	315	45	800	27	1412	1562	417	80	170	25	96	M24	65	140	18	69	M20
					457					579																	

IM V1 - IM 3011



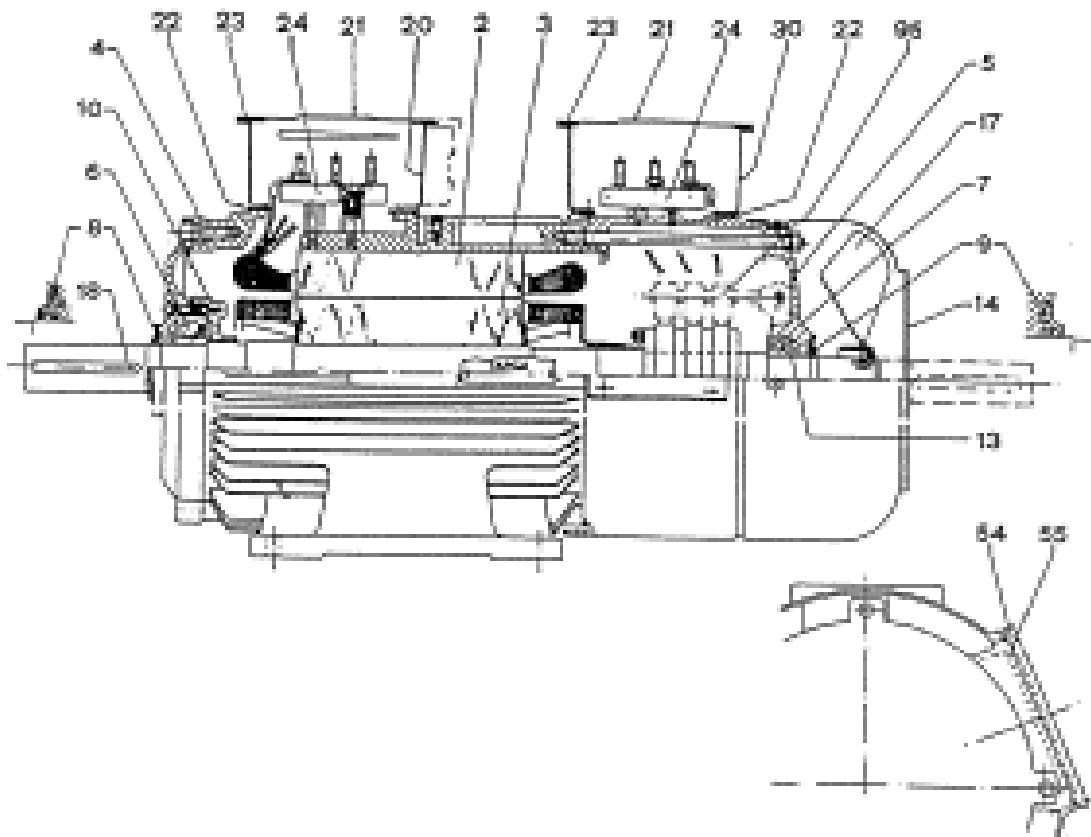
Grandezza IEC	Dimensioni				Elettrificazione (alberi)					Pancia						
	A	AD	L	W	C	E	Fhg	GA	KA	M	M/S	P	LA	KE	T	
180	M	314	246	877	279	42	110	12	45	M16	399	290	360	15	18	5
						48		54	51,5							
200	L	354	265	958	293	55		16	59							
225	S	411	296	1051	318	60	140	18	64	M 20	400	350	450	18	18	5
	M															
280	L	490	370	1335	380	75										
340	S	604	485	1497	417	80	170	22	85	M 24	600	550	650	22	22	6
	M															
315	S	604	485	1497	417	90										



Grandezza/Size	N° poli/poles	Dimensioni Dimensions					
		B	BB	BC	CA	L	LC
400	LX - LW 4-8	710	800	45	780	1970	2150
	LY - LZ 4-8	1000	1100	50	610	2090	2270

NOMENCLATURA
SPARE PARTS

GRANDEZZE 160 - 250
SIZES



- 13 Molla di precarico
- 2 Cassa con pacco statore
- 3 Rotore con albero e collettore
- 4 Scudo lato D
- 5 Scudo lato N
- 6 Cuscinetto lato D
- 7 Cuscinetto lato N
- 8 Labirinto rotante lato D
- 9 Labirinto rotante lato N
- 10 Coprichiedo interno lato D
- 14 Copriventola
- 17 Ventola
- 18 Linguetta
- 20 Scatola coprimorsetti
- 21 Copercchio scatola coprimorsa.
- 22 Guarnizione
- 23 Guarnizione
- 24 Morsetiera
- 30 Scatola coprimorsetti
- 54 Pannello ispezione
- 55 Guarnizione
- 95 Asa, portaspazzole e colleg.

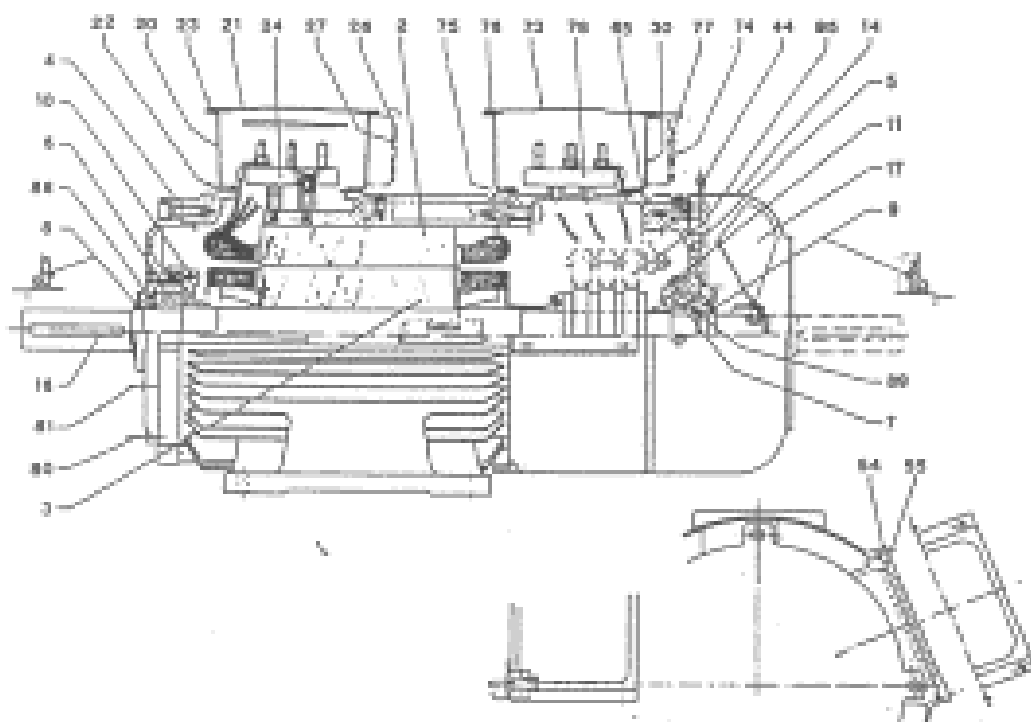
- 13 Pre-load washer
- 2 Stator frame with wound core
- 3 Rotor with shaft and slip-rings
- 4 D-end endshield
- 5 N-end endshield
- 6 D-end bearing
- 7 N-end bearing
- 8 O-end stinger
- 9 N-end stinger
- 10 O-end stinger cap
- 14 Fan cover
- 17 Fan
- 18 Key
- 20 Terminal box
- 21 Terminal box cover
- 22 Gasket
- 23 Gasket
- 24 Terminal board
- 30 Terminal box
- 54 Inspection cover
- 55 Gasket
- 95 Brush-holder support and connection

Lato D = lato comando
Lato N = lato opposto comando

D-end = drive end
N-end = non drive end

**NOMENCLATURA
SPARE PARTS**

**GRANDEZZE 200 - 315
SIZES**

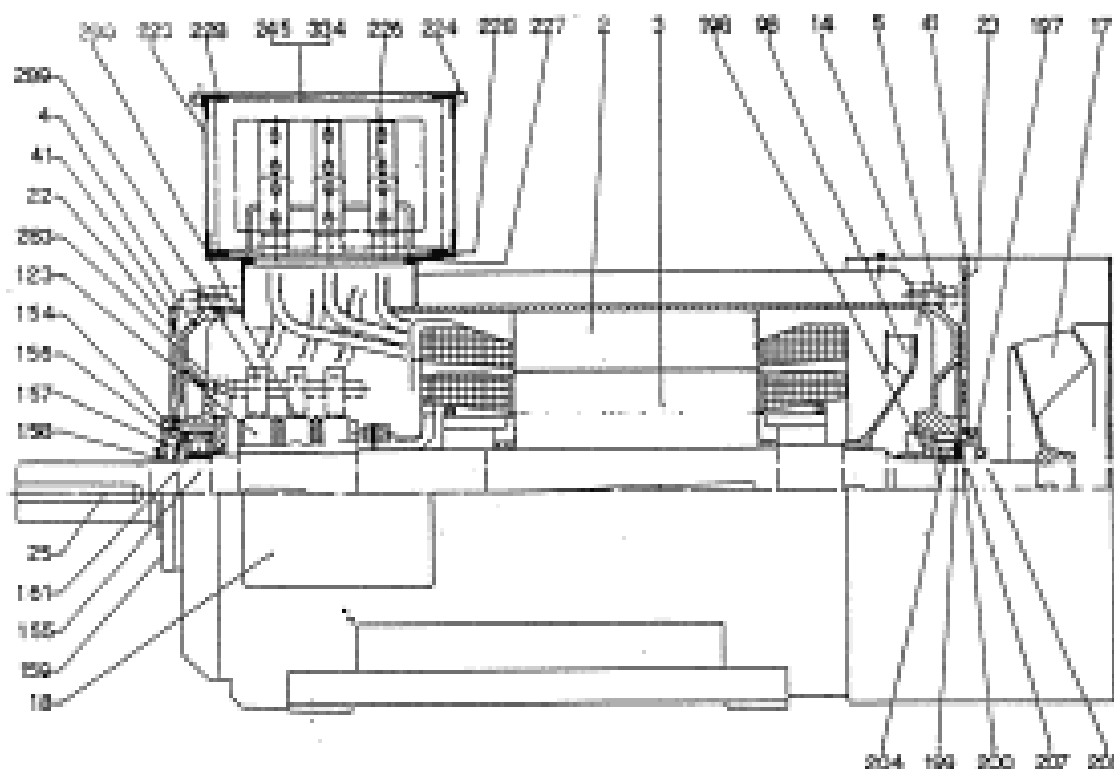


- 2 Cassa con pacco statore
- 3 Rotore con albero e colla
- 4 Scudo lato D
- 5 Scudo lato N
- 6 Cuscinetto lato D
- 7 Cuscinetto lato N
- 8 Labirinto rotante lato D
- 9 Labirinto rotante lato N
- 10 Coperciletto interno lato D
- 11 Coperciletto interno lato N
- 14 Copriventola
- 17 Ventola
- 18 Linguetta
- 20 Scatola coprimerseletti princ.
- 21 Copercchio scatola coprimerseletti
- 22 Guarnizione
- 23 Guarnizione
- 24 Manufattura
- 26 Piastra smontabile
- 27 Guarnizione
- 30 Scatola coprimerseletti
- 44 Ingrassatore
- 54 Portella ispezione
- 55 Guarnizione
- 56 Raccordo
- 73 Copercchio scatola coprimerseletti
- 74 Piastra smontabile
- 75 Guarnizione
- 76 Guarnizione
- 77 Guarnizione
- 78 Morsetteria
- 80 Tappo scarico condensa
- 81 Tappo scarico grasso
- 88 Valvola rotante lato D
- 89 Valvola rotante lato N
- 95 Asa portaspazzole e colleg.

- 2 Stator frame with wound core
- 3 Rotor with shaft and slip-ring
- 4 D-end endshield
- 5 N-end endshield
- 6 D-end bearing
- 7 N-end bearing
- 8 D-end slinger
- 9 N-end slinger
- 10 D-end inner bearing cap
- 11 N-end inner bearing cap
- 14 Fan coil
- 17 Fan
- 18 Key
- 20 Stator terminal box
- 21 Terminal box cover
- 22 Gasket
- 23 Gasket
- 24 Stator terminal board
- 26 Removable plate
- 27 Gasket
- 30 Rotor terminal box
- 44 Lubricating nipple
- 54 Inspection cover
- 55 Gasket
- 56 Frame union
- 73 Terminal box cover
- 74 Removable plate
- 75 Gasket
- 76 Gasket
- 77 Gasket
- 78 Rotor terminal board
- 80 Condensation drainage plug
- 81 Grease drainage plug
- 88 D-end grease slinger
- 89 N-end grease slinger
- 95 Brush-holder support and connection

lato D = lato comando
lato N = lato opposto comando

D-end = drive end
N-end = non drive end



2	Cassa con piccolo motore
3	Rotore con albero
4	Scudo lato D
5	Scudo lato N
14	Copriventola
17	Ventola
18	Portella ispezione
22	Tubo per ingrassatore lato D
23	Tubo per ingrassatore lato N
25	Lingetta
41	Ingrassatore
90	Ventola interna
23	Collettore
154	Coperchietto esterno lato D
155	Coperchietto interno lato D
156	Anello tenuta grasso lato D
157	Valvola rotante lato D
158	Labirinto rotante lato D
159	Tappo
161	Cuscinetto lato D
197	Coperchietto esterno lato N
198	Coperchietto interno lato N
199	Anello tenuta grasso lato N
200	Valvola rotante lato N
201	Labirinto rotante lato N
204	Cuscinetto lato N
207	Anello di sicurezza lato N
323	Scatola coprimorseri
224	Coperchio scatola morsi
225	Morsiera
227	Guarnizione
228	Guarnizione
245	Guarnizione
260	Asa portaspazzole
269	Portaspazzole
290	Spazzola
334	Placca entrata cavi

Lato D = lato comando
Lato N = lato opposto comando

2	Stator frame with wound core
3	Rotor with shaft
4	D-end endshield
5	N-end endshield
14	Fan cover
17	Fan
18	Inspection cover
22	D-end grease pipe
23	N-end grease pipe
25	Key
41	Lubricating nipple
90	Internal fan
123	slip-rings
154	D-end outer bearing cap
155	D-end inner bearing cap
156	D-end grease ring
157	D-end grease slinger
158	D-end rotating labyrinth
159	Plug
161	D-end bearing
197	N-end outer bearing cap
198	N-end inner bearing cap
199	N-end grease ring
200	N-end grease slinger
201	N-end rotating labyrinth
204	N-end bearing
207	N-end drive end circlip
223	Terminal box
224	Terminal box cover
225	Terminal board
227	Gasket
228	Gasket
245	Gasket
260	Brush-holder support
269	Brush-holder
290	Brush
334	Guide entry plate

D-end = drive end
N-end = non drive end